Agriculture, Underemployment, and the Cost of Rural Labour in the Roman World
Author(s): Paul Erdkamp
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AGRICULTURE, UNDEREMPLOYMENT, AND THE COST OF RURAL LABOUR IN THE ROMAN WORLD

INTRODUCTION

On many important aspects of the economic life of the rural population there is little that can be said. The complaint about the lack of secure data regarding the rural population of the ancient world has often been repeated, and there is no reason to restate the remarks about the lack of interest in the ancient sources for this topic. There is a danger, however, that absence of information may lead to an over-simplified picture of what actually happened. It is generally assumed that 80 or 90% of the ancient population was engaged in agriculture and that, conversely, only a small part of the population was engaged in non-agricultural work. Ancient historians have a tendency to treat the various sectors in the economy—commercial farming, subsistence farming, industries, and services (especially transport)—as strictly detached from each others. This is too simplistic a picture. We should not underestimate the importance of the employment of various economic strategies by the ancient farming population. This means that a peasant might also have been from time to time a charcoal maker, muleteer, or textile worker. If so, then agriculture and the non-agricultural sectors were indissolubly connected.

In this regard, some authors stress the position of poor peasants, who could not subsist solely on the income from their farms.[1] I want to suggest, however, that the connection between agriculture and other sectors of the economy goes further than that. The economic history of early modern Europe has produced the concept of the externalization of labour costs, which means that agriculture bears the reproductive costs of such labour which is deployed outside the primary economic niche, but still is primarily based on agriculture.[2] To clarify this by a simplified example: a peasant household makes a living by working on their small farm. Their reproductive costs—i.e. their requirements to stay alive to till the soil and perform other kinds of labour—are borne by their agricultural labour. For various reasons, part of their labour potential is deployed outside their farm, for instance in burning charcoal on those days that their labour cannot be usefully deployed in the field, or in producing textiles for the local market by those members of the household whose labour

[1] P. Garnsey, 'Introduction', in P. Garnsey (ed.), *Non-slave Labour in the Greco-Roman World* (Cambridge, 1980), 3. Cf. Garnsey, 'Non-slave labour in the Roman world', ibid., 37; J. E. Skydsgaard, 'Non-slave labour in rural Italy during the late Republic', ibid., 67; S. L. Dyson, *Community and Society in Roman Italy* (Baltimore, 1992), 134–5.

[2] Already recognized by F. Engels: 'Competition enables the capitalists to substract from the price of labour what the family produces in its own garden and small plots.' Quoted from H. Medick, 'The proto-industrial family economy. The structural function of household and family during the transition from peasant society to industrial capitalism', *Social History* 2 (1976), 299. P. Kriedte, *Spätfeudalismus und Handelskapital. Grundlinien der europäischen Wirtschaftsgeschichte vom 16. bis zum Ausgang des 18. Jahrhunderts* (Göttingen, 1980), 96: 'Das zentrale Moment für das Funktionieren des proto-industriellen Systems war die Externalisierung der Arbeitskosten. Das Handelskapital wälzte sie zu großen Teilen auf den Agrarsektor ab, indem es nur einen Teil der Reproduktionskosten der Arbeit übernahm.' The concept did not apply to the growing numbers of rural proletariat, who had an increasing role in rural industry.

potential exceeds the labour requirement of their small farm. Their farm would not produce more if they did not deploy this labour outside their farm. The income, whether in goods or money, of this labour does not therefore have to compete with the productivity of the labour deployed on their own farm. Any income from this external labour is additional to the income gained by working the farm. The income is determined by the balance between the total supply of such labour and the demand for it. Unfortunately, the demand often was very limited, which meant that the return on such labour was low. If it was not, and income from such labour was high, it could become detached from agriculture. In such a case, a peasant could turn into a full-time trader or artisan, who perhaps also worked a small plot on the side. In that case, the concept of externalization of costs would no longer apply.

The above merely outlines the concept of externalization of costs. It is important to stress that this is different from the case of the poor peasants who 'depended for their livelihood on casual work or seasonal employment in industry (especially in the construction industry) and in agriculture'.[3] In reality it is hard for us to say to what extent the reproductive costs of labour were totally borne by agriculture. There is a large grey area in which reproductive costs are largely borne by agricultural work, but in which part of the external work is a necessary supplement and thereby has to be counted as reproductive cost. That the dividing lines are not always clear, however, does not diminish their importance.

If the concept of externalization of cost applies to a significant segment of labour in the ancient world, it has important consequences for our understanding of the ancient economy. Moreover, the concept applies not only to people working the land, but also to animals such as oxen and mules, which provided a significant part of the energy requirement in agriculture and non-agricultural work. I first examine whether the concept of externalization of costs applies in the ancient world, and in particular whether there was excess labour available in the agriculture of the ancient world. Secondly, some ideas about the consequences for transport, commercial agriculture and rural industry are proposed.

SEASONAL UNDEREMPLOYMENT

Two factors have the potential for creating excess labour capacity in agriculture. The first is the result of the inevitable dependence of arable cultivation on the weather and growth cycle, leading to seasonal fluctuation in the required labour capacity. The second is connected to the availability of more labour capacity per agricultural unit than can usefully be employed, i.e. the structural underemployment of labour.

The total labour requirement of an agricultural unit is not simply the total of labour requirements for all the different tasks that are necessary to harvest each year's crop. These tasks are governed by a rather strict timetable, which makes an efficient division of tasks purely from the point of view of labour impossible. The harvest period in grain cultivation constitutes a peak in labour requirement, because cereal crops have to be harvested after becoming ripe and before the corn starts shedding. Postponing harvesting would lead to unacceptable reductions of the yield.[4] At other

[3] Garnsey (n. 1), 4.

[4] A. V. Chayanov, *The Theory of Peasant Economy*, D. Thorner et al. (edd.), (Manchester, 1996), 189; M. S. Spurr, *Arable Cultivation in Roman Italy, c. 200 B.C.–c. A.D. 100* (London, 1986), 67. Cf. P. Halstead and G. Jones, 'Agrarian ecology in the Greek islands. Time stress, scale and risk', *JHS* 109 (1989), 47, regarding the time stress of small farmers on the Aegean islands of

times of the year there is little work to be done in the field. The farmer had a few options to alleviate the problems of the timetable. In the first place, he could cultivate different crops, which each had a slightly different growth cycle. This was not only the case regarding different kinds of corn, but also regarding other types of crop. Beans, for instance, are ready for picking early in the year, while millet is harvested later.[5] Furthermore, there are also important microclimatic differences. Harvest on a northern slope, for example, is later than on a slope facing southwards. In the hills, therefore, the fragmentation of the plots, which was usual in agricultural practice in the early modern Mediterranean, had the advantage of reducing time stress on labour demand.[6] All these options, however, did no more than diminish the fluctuations in labour demand; they could not remove them. The subsistence peasant, whose primary aim was to produce his food requirement, was limited in diversifying the tasks on his farm. The commercial farmer was in a better position, but even he was confronted with the need to acquire external labour during the harvest period, while having excess labour at other times of the year.[7] The peasantry had little access to external labour; on the contrary, smaller farmers often contributed their labour to the harvesting on large estates. Therefore, peasants and small farmers, who did not hire day-labourers, had to have at their disposal the human and animal labour required to work the land at peak times. This resulted in a significant seasonal underemployment of their labour on their own farm.[8]

STRUCTURAL UNDEREMPLOYMENT

Structural underemployment resulted from the imbalance between the available labour, capital, and land in an agricultural unit. The degree to which each of these variables could be modified by the others is critical.[9] There is little reason to assume that the rural masses had much capital at their disposal. They might have resorted to loans from more wealthy neighbours, but this they probably did only in emergencies, while loans to the rural poor were not a very attractive investment. It can safely be concluded that for most of the peasantry, available capital was fixed at a low level.

The labour capacity of peasants, whether working their own land or as tenants, generally consists of the members of their households.[10] Although demographic

Karpathos and Amorgos. They point out the dangers of sudden storms, theft, birds, or raiding by livestock (49–50), and one may add the danger of fire.

[5] Similarly, Columella 3.12.10 advises the cultivation of different kinds of vine, in order to spread the labour demand at vintage time. Cf. Spurr (n. 4), 139, referring to estates: 'Perhaps only on those estates (rare in my view) which grew only one type of cereal, and where the topography was even throughout, would free labour have been hired on any scale.' On crop diversification in ancient Greek agriculture see T. W. Gallant, *Risk and Survival in Ancient Greece. Reconstructing the Rural Domestic Economy* (Cambridge, 1991), 36–7.

[6] Cf. P. Garnsey, *Famine and Food Supply in the Graeco-Roman World* (Cambridge, 1988), 49; Halstead and Jones (n. 4), 50–1; Gallant (n. 5), 42ff.

[7] E.g. Columella 2.12.9. I will discuss an alternative option later.

[8] Also Garnsey (n. 1), 37–8; D. W. Rathbone, 'The development of agriculture in the ager Cosanus during the Roman republic. Problems of evidence and interpretation', *JRS* 71 (1981), 15. Cf. A. Knotter, 'Problems of the family economy. Peasant economy, domestic production and labour markets in pre-industrial Europe', *Economic and Social History in the Netherlands* 6 (1994), 35ff., regarding the 'labour cycle' in early modern Europe.

[9] Cf. Chayanov (n. 4), 91ff.

[10] For Garnsey (n. 1), 34, this is the defining characteristic of the smallholder. Pliny, *N.H.* 18.38 is interesting here. In the interpretation of W. Scheidel, 'Coloni und Pächter in den römischen literarischen Quellen vom 2. Jh. v. Chr. bis zur Severerzeit. Eine kritische Betrachtung. Colonus-

mechanisms, which are partly governed by economic circumstances, determine the size and development of households, the household is not easily adapted in the short term to the labour requirement of the household. As Chayanov emphasized, the size and composition of the household largely determine the consumption need of the household and at the same time the labour capacity to achieve this requirement.[11] Migration, recruitment into the army or navy, or similar options were available only to a limited extent, since there were only limited opportunities to make a living.[12] Domestic labour in nearby towns, which was an important option for young females in early modern Europe, did not exist, due to the predominance of slave labour in this sector.[13] The limitedness of opportunities holds true also for the separation of part of the household into a new household. There had to be an economic niche—or several niches—available to sustain such a household.

In this regard it is also necessary to point out that, though co-residence and economic cooperation generally coincide, they are not automatically connected. A member of a peasant household could still co-reside but employ his labour away from the farm—that is, he or she could employ a different economic strategy from that of the rest of the household, although from our point of view the various sources of income sustaining the household are not easily separated.[14] Conversely, households

Studien 1', *Athenaeum* 80 (1992), 354–5, the passage is translated thus: 'Die Land- wirtschaft gut zu betreiben ist notwendig, aber verderblich sie bestmöglich zu betreiben, außer wenn der Landwirt mit seinen Nachkommen oder jenen, die er ohnedies ernähren muß, wirtschaftet.' Scheidel rightly says: 'Die Stelle nimmt somit auf die Subsistenzwirtschaft von Bauernfamilien bezug, für die intensivste Bewirtschaftung deshalb möglich sei, da der "labour input" mit keinerlei Kosten verbunden ist.' In other words, reproductive costs were borne by the farm anyhow. However, the question is also whether there were alternative options of employment for this labour.

[11] Chayanov (n. 4), 56ff. His hypotheses have been rightly criticized for their rigidity, but in principle the cyclical development of the consumer–worker ratio remains a valuable concept. Cf. Medick (n. 2), 298–9. Chayanov's ideas are applied to ancient Greece by Gallant (n. 5), 60ff. A shortcoming of his analysis of the ratio between the cyclically changing number of workers and the labour requirement, however, is that he uses labour intensity as a rigid variable, which it is not.

[12] Skydsgaard (n. 1), 70; Dyson (n. 1), 187. Regarding ancient Greece, see Gallant (n. 5), 133ff.

[13] R. P. Saller and D. I. Kertzer, 'Historical and anthropological perspectives on Italian family life', in D. I. Kertzer and R. P. Saller (edd.), *The Family in Italy from Antiquity to the Present* (S.l., 1991), 9–10, point out that values of honour and shame precluded an important role for such service. Cf. J. K. Evans, *War, Women and Children in Ancient Rome* (London, 1991), 117–18; D. S. Reher, *Cambridge Studies in Population, Economy and Society in Past Time, 12 Town and Country in Pre-industrial Spain. Cuenca 1550–1870*, (Cambridge, 1990), 201ff.; M. Barbagli and D. Kertzer, 'An introduction to the history of Italian family life', *Journal of Family History* 15 (1990), 381.

[14] Cf. Knotter's criticism (n. 8), 20–1, of the concept of the 'family economy' in early modern Europe as used, for instance, by Medick (n. 2). Knotter: 'People appear to allocate and coordinate their labour within the family in much more varied ways than originally assumed.' It has to be stressed, however, that Knotter has the pro-industrial family rather than the peasant family in mind. The fewer the alternative economic strategies available (e.g. as a result of a hardly developed wage economy), the more the peasant family has to operate as a production unit. The concept of the family economy goes back to Chayanov. Central to Chayanov's theories was the peasant family, which was firmly attached to its basic source of livelihood in working the land and for whom external labour was at most secondary. Central to Knotter's analysis, however, seem to have been the marginal, rural groups, who had little access to land and for whom economic strategies apart from subsistence farming had become of primary importance ('sub-peasants'). Nevertheless, Knotter's emphasis on social differentation among the peasantry provides important refinement of the family economy concept. Cf. Knotter (ibid.), 22ff., who also refers to Mitterauer's distinction between the peasant and sub-peasant strata. Medick (ibid.), 295,

could reside separately but still cooperate, working the same land and using the same working animals and implements.[15] The latter is often the case when the population working the land resides not on the land but in nucleated settlements, while cultivating small, dispersed plots. Co-residing and cooperating multiple or extended households, on the other hand, may have been found more often in a population that lived in dispersed farmsteads.[16] However, we know next to nothing about the household patterns and their regional and social variations in the rural population of the ancient world.[17]

Economic cooperation within and between households in an agricultural population is largely connected to the access to land. Partible inheritance, which seems to have been predominant in the ancient world, assures access to some land to all heirs,[18] but is often accused of leading to impossibly small holdings. However, it is wrong to blame partible inheritance as such for this development, which only occurs either when the farming population significantly increases or when part of the land steadily falls into the hands of a small number of landowners. In a stagnant but stable peasant community, partible inheritance leads rather to a continuous fragmentation and reshuffling of plots, but not to a decrease in the amount of land held by peasant families.[19] Fragmentation of land is sound practice and, as we have just seen, does

had already emphasized the importance of social context when stressing the differences in function between the extended household among the rural proletariat and among the peasantry.

[15] Cf. the joint property of separate households in late medieval Macedonia. A. Laiou, *Peasant Society in the Late Byzantine Empire. A Social and Demographic Study* (Princeton, 1977), 73ff., emphasizes that, while household and family changed cyclically in accordance with the succession of the generations, they retained joint property and continued economic cooperation. According to early medieval law in Italy, where partible inheritance predominated, it was common for heirs to hold property jointly and undivided. R. R. Ring, 'Early medieval peasant households in Central Italy', *Journal of Family History* 4 (1979), 16.

[16] Thus Barbagli and Kertzer (n. 13), 375, regarding nineteenth- and twentieth-century Italy. The same considerations apply in the Roman world. Cf. D. I. Kertzer and C. Brettell, 'Advances in Italian and Iberian family history', *Journal of Family History* 12 (1987), 92 and 113: 'Both southern Italy and southern Portugal were characterized by agrotowns, and these are the areas where large, complex family households were, in general, least frequent.'

[17] On household patterns, see R. P. Saller, 'Familia, domus, and the Roman conception of the family', *Phoenix* 38 (1984), 336–55; R. P. Saller and B. Shaw, 'Tombstones and Roman family relations in the principate. Civilians, soldiers and slaves', *JRS* 74 (1984), 124–56. Cf. Gallant (n. 5), 12ff.; and P. Garnsey and R. P. Saller, *The Roman Empire. Economy, Society and Culture* (London, 1987), 126ff., who postulate the predominance of the nuclear family in the ancient world. The methods of Saller and Shaw are rightly critized by D. B. Martin, 'The construction of the ancient family. Methodological considerations', *JRS* 86 (1996), 40–60. Saller and Shaw had analysed relationships in funerary inscriptions between the dead and the ones commemorating them. Parent–child relationships counted as nuclear. One of Martin's main arguments is that 'their study demonstrates only that most people depended on members of their immediate family for commemoration; it does not demonstrate, and should not be taken to imply, that other "non-nuclear" relationships were absent' (45). Furthermore, 'their procedure is methodologically biased to emphasize the nuclear family and de-emphasize the extended family from the outset' (47).

[18] Whether daughters had strong rights or an equal part to their brothers is unclear. In general, see R. P. Saller, 'Roman heirship strategies in principle and in practice', in Kertzer and Saller (n. 13), 26–47.

[19] Cf. Laiou (n. 15), 197 regarding late-medieval Macedonia, where partible inheritance predominated. 'The low rate of reproduction of this population . . . would preclude a high incidence of fragmentation of holdings. . . . The lands of families that died out could flow to other families.' However, peasant holdings increasingly came in the hands of wealthy landowners, in particular the many monasteries (208). One may also point to the relationship between partible inheritance and the lack of alternative economic strategies among the share-croppers in early

not preclude cooperation between heirs. What about the pressure on the land in the Roman world? We know little for certain about the development of population size in the ancient world; we know still less about the rise or fall of particular segments of the population. Nevertheless, it seems to be generally accepted that in some regions the number of peasants and small farmers fell during the late Republic or early Empire as a result of the expansion of agricultural enterprises of a larger scale in some areas. Therefore the decrease in the number of small farmers in these regions did not lead to a decrease in pressure on the access to land. This is not to argue that peasants and small farmers completely disappeared. They probably predominated throughout antiquity in isolated regions and remained important alongside other forms of agriculture.[20] The point is that generally pressure on the access to land of small farmers and peasants did not diminish.

Some flexibility in the access to land was provided by tenancy, but our understanding of the role of various kinds of tenancy in the Roman world is limited.[21] We do not know how much land was cultivated by small-scale tenants, but it may be assumed that most peasants lacked the capital to rent land in addition to the land they owned. Such tenants may have been small farmers rather than poor peasants.[22] Lack of capital was less of a problem in share cropping, in which capital in the form of seed, implements, etc. was provided by the landowner, who in turn received a fixed part of the harvest.[23] Since the labour was provided by the tenants, it was in the interest of the

modern Tuscany and the high proportion of extended households. Cf. F. McArdle, *Altopascio. A Study in Tuscan Rural Society, 1587–1784* (Cambridge, 1978), 137–8; Ring (n. 15), 19; and R. Sallares, *The Ecology of the Ancient Greek World* (London, 1991), 208.

[20] Thus J. K. Evans, 'Plebs rustica. The peasantry of classical Italy', *AJAH* 5 (1980), 19ff.; Garnsey (n. 1), 35–6; Skydsgaard (n. 1), 68; Dyson (n. 1), 44; S. Bergqvist, 'Considerations on yields, the distribution of crops and the size of estates. Three Roman agricultural units', *Classica et Mediaevalia* 43 (1993), 112–13. The continued existence of small and medium-sized farms in many regions of Italy has been confirmed by archaeological surveys. For example: E. M. Wightman, 'The lower Liri valley. Problems, trends and pecularities', in G. W. W. Barker and R. Hodges (edd.), *Papers in Italian Archaeology II. Archaeology and Italian Society* (Oxford, 1981), 278; S. L. Dyson, 'The villa of Buccino and the consumer model of Roman rural development', in C. Malone and S. Stoddart (edd.), *Papers in Italian Archaeology IV. Classical and Medieval Archaeology* (Oxford, 1985), 76; B. Ward-Perkins et al., 'Luni and the Ager Lunensis. The rise and fall of a Roman town and its territory', *PBSR* 54 (1986), 106ff.; S. Coccia and D. Mattingly (edd.), 'Settlement history, environment and human exploitation of an intermontane basin in the central Apennines. The Rieti survey 1988–1991, part I', *PBSR* 60 (1992), 271–2; E. Curti, E. Dench, and J. R. Patterson, 'The archaeology of central and southern Roman Italy. Recent trends and approaches', *JRS* 86 (1996), 175 and 177 (cf. pp. 186f.). On the emergence of large estates, see G. Barker, 'The archaeology of the Italian shepherd', *PCPhS* 35 (1989), 13; P. Arthur, *Romans in Northern Campania* (London, 1991), 66 and 100–1; Dyson (n. 1), 31.

[21] Also L. Foxhall, 'The dependent tenant. Land leasing and labour in Italy and Greece', *JRS* 80 (1990), 104. Scheidel (n. 10), *passim*, has shown that, despite many assumptions often made, the literary sources shed little light on the social position of tenants or on the nature of tenancy contracts in the Roman world. The seeming predominance of wealthy tenants renting estates might reflect social bias, while small-scale tenants remain largely invisible. In any case, Scheidel points out, the data do not point to increasing small-scale tenancy before Severan times. Cf. W. Scheidel, *Grundpacht und Lohnarbeit in der Landwirtschaft des römischen Italien* (Frankfurt am Main, 1994). According to P. W. de Neeve, *Colonus. Private Farm-tenancy in Roman Italy during the Republic and the Early Principate* (Amsterdam, 1984), tenancy developed mainly from the first century B.C. onwards. Share-cropping only occurs in the sources for the principate (15ff.). Cf. Dyson (n. 1), 79ff. and 132ff.

[22] Cf. Garnsey (n. 1), 38.

[23] Cf. Foxhall (n. 21), 107–8, who points out that the landowner may have provided the use of oxen.

landowner to optimize land productivity, not labour productivity. In other words, the landowner strove to achieve the highest volume of production possible on the land; it was therefore in his interest that the number of adult labourers on the rented land was as high as possible, so far as this labour could be usefully employed on the farm, thus leading to labour-intensive cultivation.[24] The other side to the agreement—the income of the tenants who cultivated the land—was of no importance to the landowner, as long as the continuation of the cultivation of the land was assured. Structural underemployment was not stimulated by share-cropping, since neither the landowner nor the tenants profited from available labour in excess to the requirements of the land. However, in the case of long-term tenancy contracts, there was still little opportunity to adjust the volume of land cultivated to the labour capacity available.[25] Insofar as share-cropping or other forms of tenancy did not improve flexibility of access to land and thereby provide opportunities to optimize labour productivity for peasants and small farmers, it did not limit structural underemployment.[26]

It should not be concluded from the inflexibility of the balance between land and labour that peasants and small farmers generally could not make a living from their land (although sometimes this undoubtedly happened), but rather that they could not optimize their labour productivity because of limited access to land and capital. There were two options for farmers who were confronted with an excess of labour capacity: either they could intensify their agricultural practice or they could employ part of their labour outside their farm.[27] By increasing labour input per unit of land one can increase land productivity at the cost of labour productivity. However, it goes without saying that there is a limit to intensification of cultivation of subsistence crops like corn and legumes, or even vines. If, as is likely, the subsistence farmer already worked most of his land under a labour-intensive cereal–pulse rotation, he soon reached this limit.[28] This was even more so in those cases where the more fertile soil in favourable conditions was cultivated by commercial farming, leaving the less fertile soil to the peasants.

[24] Thus, regarding share-cropping in early modern Tuscany, see D. I. Kertzer, 'The joint family household revisited. Demographic constraints and household complexity in the European past', *Journal of Family History* 14 (1989), 4. As a result, multiple households predominated among share-croppers. In one nineteenth century community in Tuscany, three-quarters of the share-croppers lived in households containing two or more simple family units. Cf. V. Caiati, 'The peasant household under Tuscan Mezzadria. A socioeconomic analysis of some Sienese Mezzadri households, 1591–1640', *Journal of Family History* 9 (1984), 113–14. As Kertzer (ibid.), 10, observes, similar considerations applied to the Russian serfs. Cf. Kertzer and Brettell (n. 16), 93. Soil productivity, therefore, could be higher than on plots cultivated by wage labourers or slaves, as remarked by Foxhall (n. 21), 102. She also points out that small plots provided a supply of wage labour for landowners.

[25] Cf. the differences in household structure between the short-term share-croppers (*mezzadri*) and the tenants who had contracts over three or four generations (*livellari*). McArdle (n. 19), 177–8.

[26] Cf. Caiati (n. 24), 122–3, regarding early modern Tuscany: 'In general, however, neither the familial relations of the mezzadri nor the frequent reordering of leaseholds succeeded in eliminating the tendency for an imbalance to develop between production and consumption on leaseholds.' This imbalance led to an increasing frequency of demands for loans and assistance in the form of corn from the landowner (125).

[27] Cf. Chayanov (n. 4), 106ff. Evans (n. 20), 137, also concluded that 'many of the peninsula's smallholders were free to seek supplemental employment, even at a considerable distance from their homes'. He assumed that many would spend part of this time hunting or food-gathering. See also P. W. de Neeve, *De boeren bedreigd* (Amsterdam, 1993), 25.

[28] P. Halstead, 'Traditional and ancient rural economy in mediterranean Europe: plus ça change?', *JHS* 107 (1987), 81ff.

A subsistence farmer could choose the option of achieving his subsistence requirement through the market. This concept may be rather surprising to some ancient historians, who are used to assuming a strict division between subsistence farmers and market-oriented farmers. 'Subsistence farmer' means a farmer whose primary aim in agricultural production is the stable and secure fulfilment of the requirements of the household. (The household may not be equal to the number of people working the land, because of the possibility of household members who employ their labour outside the farm.) To achieve this, the household can fulfil its needs directly, or it can produce something that is exchanged to meet these needs. The difference from the commercial farmer is that the goal is not optimization of the output of capital or land, though one would of course not object to achieving this. Flax, for instance, may be produced and exchanged into a larger volume of corn than it would have been possible to produce on the same piece of land. Flax, furthermore, requires more labour input than corn, thus allowing a useful intensification of labour. This holds true also for luxury vegetables and fruits, or, for instance, flowers for a prosperous market.[29]

However, there are some setbacks and limitations regarding the option of exchanging labour-intensive, market-oriented crops into primary food crops. The workings of the mechanism depend on the exchange value of the one against the other. A secure and stable fulfilment of the primary requirements of the farmer therefore depends on the stability of two kinds of market: the demand for the market-oriented crop and the supply of staple food. In many regions of the Roman world, however, neither criterion was available. The food supply in many parts of the ancient world, especially in inland regions, was subject to serious fluctuations in production, problems of transportation, and lack of well-developed distribution mechanisms, resulting in structural vulnerability of the food market. Rural areas generally lacked the concentration of buying power, the access to market channels, and the political power which often put urban centres in a better position at times of food shortage. Prices of staple food would have risen and fallen sharply. A more or less secure food supply may have been achieved, but only in a few regions, for example in central Italy in the early Empire, which had a fairly secure access to imports. Likewise, the demand for goods like flax, fruits, or flowers was of limited volume and not very stable, again particularly in inland regions which lacked easy access to markets to sell their produce. To quote a famous passage: 'But those of us who dwell far from the sea derive no advantage from those things in which we abound nor can we obtain what we lack, as we can neither export what we have nor import what we need.' A larger and more stable market was probably available in the direct neighbourhood of large and prosperous urban markets, for example in central Italy.[30] On average over a number of years one might be better off selling

[29] On the marketing of fruits, flowers, and similar items, see J. M. Frayn, *Markets and Fairs in Roman Italy. Their Social and Economic Importance from the Second Century B.C. to the Third Century A.D.* (Oxford, 1993), 76. She emphasizes the consideration that the most perishable goods would come from the immediate neighbourhood of the town. Cf. Chayanov (n. 4), 113ff.

[30] Gregory of Nazianzus, *Or.* 43.34, quoted from J. K. Evans, 'Wheat production and its social consequences in the Roman world', *CQ* 31 (1981), 429. See e.g. Frayn's analysis (n. 29), 91ff., of commerce in mountainous regions in Italy. Interesting also is De Neeve's application (n. 27), 10ff., of Von Thünen's location-principles in central Italy. The redistributive economy of ancient Egypt, where the circulation of corn was controlled by the central authorities, may also have offered more stability and therefore more economic differentiation than most other provinces. The seeming importance of flax and the frequent mention of village weavers in Egypt does not necessarily reflect the situation in the rest of the Roman empire. Cf. A. H. M. Jones, *The Roman Economy* (Oxford, 1974), 355ff.

flax and buying corn, but this average is of little use when in two consecutive years prices of flax fall and those of corn soar, leading to hunger and starvation. The early modern parallel indicates that demand for manufactured goods tends to fall when prices for food rise. Xenophon expressed the same notion, when he wrote that all professions prospered when agriculture did, but that when the soil remained bare, all other forms of employment vanished.[31] Therefore, the consideration of minimalization of risk, which, as modern historians increasingly realize, played such an important role in the life of the ancient peasants and farmers, urged them to keep their involvement in food production as direct as possible.[32]

Many of the aspects of the ancient economy only briefly broached in the above argument would require a more detailed and comprehensive study than is possible in this context. I hope, nevertheless, to have shown that it was not only seasonal underemployment which governed agriculture in the ancient world, but also structural underemployment as far as those peasants and small farmers who had limited access to land and could not easily adjust their labour capacity to the land they worked are concerned. This excess labour capacity, though still totally or partly dependent on agricultural production for its sustenance, could be employed in economic strategies away from the farm. This means that the reproductive cost of the labour employed in other sectors of the economy was totally or partly shifted to agriculture, which limited, firstly, the cost of such labour and, secondly, the rural, non-agricultural sector as a market for agricultural produce.

The useful employment of much available labour on the land was limited by the low labour intensity of most primary food crops, while labour-intensive cash crops exposed them to the risks of a very unstable market. The other option (apart from intensifying their agricultural practice) was to employ part of their labour external to their farm. Underemployment would have resulted in not working at all for part of the time. However, the need to acquire cash for rent or taxation, or the desire to acquire money that could be put away for times of emergency, used as bridal gift, and so forth may have been a stimulus to employ excess labour.

In what follows, some consequences of the externalization of labour costs are discussed regarding transportation and rural industry.

TRANSPORTATION

In hardly any field of the Roman economy does the lack of quantitative material hamper our understanding as much as in the field of civilian transportation. While, for instance, the distribution of Italian amphorae in Gaul indicates that the network of rivers played an important role in their transportation, we have no means of assessing its volume or its relative economic importance. Though we must acknowledge

[31] Xenophon, *Oecon.* 5.17. The situation was different for wealthy producers, who could fall back on financial reserves. Chayanov (n. 4), 293, however, points out that, due to the labour intensity of cash crops such as flax, these were less attractive to commercial agriculture than to peasant farmers.

[32] Also, Halstead (n. 28), 86; W. Jongman and R. Dekker, 'Public intervention in the food supply in pre-industrial Europe', in P. Halstead and J. O'Shea (edd.), *Bad Year Economics. Cultural Responses to Risk and Uncertainty* (Cambridge, 1989), 116; L. de Ligt, *Fairs and Markets in the Roman Empire. Economic and Social Aspects of Periodic Trade in a Pre-industrial Society* (Amsterdam, 1993), 130. Cf. Chayanov (n. 4), 121ff., on the degree of market orientation of the peasant agriculture. An important criticism to be made of his hypotheses is that they fail to consider the element of minimalization of risk.

the capability of ancient transport to move large blocks of marble in large numbers some distance over sea or land, this does not bring us much further in a meaningful analysis of transportation as an element shaping the ancient economy.[33] Much emphasis has—rightly—been put on the price difference between the various means of transportation: overseas shipment was cheaper than transportation by river, which in turn was cheaper than haulage overland. This has led to the fundamental understanding that it was cheaper to move goods over hundreds of kilometres by sea than just a short distance overland and that the lack of a cheap means of transport meant the economic isolation of inland regions. The resulting picture might, however, be somewhat misleading in that it overemphasizes the 'cheap' overseas and river transport and underestimates the 'expensive' transportation by land.[34]

Because of the vast amount of data available, the economic history of early modern Europe has some revealing points to make in this regard. The means of transport in sixteenth- or eighteenth-century France or Spain were hardly any different from those of *Gallia* or *Hispania*. Mules and animal-drawn carts still managed most of the transportation overland;[35] riverboats were still towed upstream by man or animal;

[33] A. Tchernia, 'Italian wine in Gaul at the end of the Republic', in P. Garnsey et al. (edd.), *Trade in the Ancient Economy* (London, 1983), 87–104; P. Middleton, 'The Roman army and long distance trade', in P. Garnsey and C. R. Whittaker (edd.), *Trade and Famine in Classical Antiquity* (Cambridge, 1983), 75–83. This is not to say that A. Burford's article, 'Heavy transport in classical antiquity', *Economic History Review* 13 (1960), 1–18, did not have an important point to make in pointing out that ancient transport technology did have the capacity to move heavy goods. Cf. A. M. Snodgrass, 'Heavy freight in Archaic Greece', in P. Garnsey et al. (edd.), *Trade in the Ancient Economy* (London, 1983); R. G. Osborne, *Classical Landscape with Figures. The Ancient Greek City and its Countryside* (London, 1987), 84 and 91.

[34] On transportation in antiquity: W. L. Westermann, 'On inland transportation and communication in antiquity', *Political Science Quarterly* 43 (1928), 364–87. C.A. Yeo, 'Land and sea transportation in Imperial Italy', *TAPA* 77 (1946), 224: The cost of transporting corn 100 miles by ox-team 'was equivalent to about 62% of the Roman price'. 'It is not to be wondered at that the large-scale production of wheat was unprofitable and that Italy was unable to support herself in cereals.' Yeo derived the price of transporting corn from a passage in Cato on the transportation of an oil-press. The arguments that will be given anon will hopefully explain why the transportation of an oil-press is not a fair comparison to the distribution of corn. Yeo's figures are criticized by R. Laurence, 'Land transport in Roman Italy. Costs, practice and the economy', in H. Parkins and C. Smith (edd.), *Trade, Traders and the Ancient City* (London, 1998), 130ff. A. H. M. Jones, *The Later Roman Empire, 284–602. A Social, Economic and Administrative Survey* (Oxford, 1964), 821ff., was influential. Consequently, J. G. Landels, *Engineering in the Ancient World* (London, 1978), 170, starts his chapter on land transport with remarks on its unimportance. Similarly, G. Rickman, *The Corn Supply of Ancient Rome* (Oxford, 1980), 13: movement by land 'was both extremely slow and intolerably expensive'. See also K. D. White, *Greek and Roman Technology* (London, 1984), 131–2; H.-C. Schneider, 'Die Bedeutung der Straßen für den Handel', *Münstersche Beiträge zur antiken Handelsgeschichte* 1 (1982), 85–95. D. V. Sippel, 'Some observations on the means and cost of the transport of bulk commodities in the late Republic and early Empire', *Ancient World* 16 (1987), 35–45, argues that cities like Rome would be willing to pay for high costs of transport overland up to 200 miles, especially in winter, when the sea was closed and farmers profited from a seller's market. Recently, Dyson (n. 1), 34, according to whom transport problems limited the ability of Italian farmers to supply Roman markets; this discouraged the development of any major Italian domestic grain market. A structural approach to transport in antiquity was introduced by K. Hopkins, 'Models, ships and staples', in P. Garnsey and C. R. Whittaker (edd.), *Trade and Famine in Classical Antiquity* (Cambridge, 1983). He pointed out that the high cost of land transport was only one factor among others in shaping trade and economy. See also K. Hopkins, 'Economic growth and towns in classical antiquity', in P. Abrams and E. A. Wrigley (edd.), *Towns and Societies* (Cambridge, 1978), 43ff.

[35] In the Spain of *c.* 1800, 90% of transport was undertaken by pack animals. D. R. Ringrose, *Transportation and Economic Stagnation in Spain, 1750–1850* (Durham, NC, 1990), xxii.

the capacity of carts or boats had not significantly altered, nor had their speed. The price difference had therefore not significantly changed either. Nevertheless, far more goods were transported overland than by sea or river. Two points have to be emphasized in this regard: first, the distinction, as made by Braudel, between 'high' and 'low' transportation;[36] secondly, the realization that 'price' was not the most important consideration in a large part of overland transportation.

Low transportation means the movement of goods over short distances. The largest element in it is the local distribution of agricultural produce. Agriculture produced by far the largest quantity of goods to be moved; the largest part of agricultural produce was consumed locally. To this may be added the transport of firewood, hay, bricks, manufactured goods for the local market, and similar items. The movement of goods for local consumption amounted to a large volume of transport, but over a short distance. On the other hand, the transportation of goods over medium or long distance was of much smaller volume, though of no little economic significance. Land transportation had by far the largest part in the local movement of goods. The importance of transportation by river or sea lay largely in the movement over a medium or long distance.[37] This is also reflected in the network of roads and waterways. The total length of highways and waterways at the end of the eighteenth century—although it was the century of highway and canal building—was still only a fraction of the total length of small roads and paths for local usage.[38]

This is inextricably connected to the supply of transport capacity. Though there was an economically significant group of professional transporters—by ship, river-boat, pack animal, or horse- or ox-drawn cart—much more transport was undertaken by people (and animals) who were primarily engaged in agriculture. As we have seen, agricultural labour was of seasonal character, leaving farmers for part of the time with their own and their animals' labour to be employed in the movement of goods. The post-harvest period was furthermore the time of year that most goods had to be transported. Part of this was the farmers' own surplus production; part of it involved the transportation of goods in wider trade channels. In addition, labour capacity which at least partly depended for its livelihood on agricultural production but which could not be usefully employed on the farm was now available. To give a few examples: Spanish farmers would travel to neighbouring regions to exchange their own surplus of, for instance, corn for wine or olive oil. Some farmers produced charcoal with their

[36] F. Braudel, *The Identity of France. Vol. 2. People and Production* (New York, 1990), 461ff.

[37] Braudel (n. 36), 479–80: 'Waterways were used for medium- and particularly for long-distance traffic' and 'should be compared to the main highways'. F. Braudel, *The Wheels of Commerce* (London, 1982), 350ff., refers to the study of W. Sombart, who concluded that in Germany at the end of the eighteenth century five times as much goods was transported overland as by river. Another example is given by an estimate of the transportation in France undertaken in 1828: 4.8 million tons transported by waterways, 41.3 million by land; the latter can be divided in 30.9 million tons local and 10.4 long-distance transportation. Also Braudel (n. 36), 464, and 488 on the volume of agricultural surplus production.

[38] Braudel (n. 36), 464ff. In 1836 there were in France some 34,500 km of first-class highways and 36,500 km of second-class roads. The smallest or third-class roads, 'which were essential supply-routes for the villages, as well as carrying harvest-waggons, haywains, fertilizer, timber, stone, lime and sand', accounted for 771,000 km. Highway building in France, Braudel (ibid.), 466ff.; in Spain, Ringrose (n. 35), 14ff. Regarding the Roman empire, Schneider (n. 34), 92–3, concludes that the economic role of the main highways was very limited. Local and small-scale selling of produce constituted the largest part of trade; this trade was conducted by peasants and farmers using pack animals for transport. 'Straßen wären dabei in vielen Fällen nicht notwendig gewesen, Pfaden hätten wie im antiken Griechenland ausgereicht.'

excess labour; periodically they would transport the charcoal to a town of their region in order to sell it. In France the network of rivers was made good use of to transport goods. However, in many places the goods had to be hauled overland from one river to another, which was cheaply undertaken by seasonal labour. Because of their need to employ their labour and that of their animals throughout the year and the limited ways of doing so, the farmers would undertake almost any transportation they could get. Any gains were profit. Unlike professional transporters, it was not their primary means of subsistence. Therein lay also its limitation. They would only offer their labour when the agricultural season allowed. While they were cheap at the right season, they would not transport goods even for high wages when their labour was needed on the field.[39] Although they would certainly try to maximize their profit, the transportation they undertook was not determined by 'cost' or 'price'. As Ringrose emphasized in his study of transport in early modern Spain, such a vast amount of transport capacity was only offered because it was connected to agriculture; separated from the primary means of existence in agriculture, this cheap transport could not exist. As it was, peasants and small farmers provided a large part of short- and even medium-distance transportation.[40]

People who professionally offered transportation by pack animal or ox-drawn cart had a share of the market too. In eigthteenth century Spain, their services were mostly employed in the trading of manufactured goods and in the supply of the city of Madrid.[41] The Spanish capital, at the end of the century numbering approximately 170,000 people and not situated on a coast or navigable river, offers a very good example of the capacity of transportation overland. The supply of goods to the city has been estimated as 600,000 loads of pack animals or 150,000 wagonloads annually. However, at the end of the eighteenth century the city was reaching its limit. The city of Madrid could only sustain its size because of government support; it was based on its political, not its economic, function.[42]

The important points are, firstly, that the poor efficiency of transportation overland should not lead us to underestimate its importance in the movement of goods. While the total of ton-kilometres was larger by ship and river, the total volume of goods

[39] Cf. Knotter (n. 8), 35: 'The members of the family cannot choose their jobs at random by measuring earning differentials or opportunity costs only, as they would do according to neo-classical economic theory. They have to attune their labour among themselves and to seasonal variations in labour demand in specific economic and ecological settings.'

[40] Ringrose (n. 35), 48ff. 'The conversion of such people to specialized transporters would have robbed farming of a large portion of its scarce animal power, destroyed the cost advantages inherent in the peasants' position as agriculturalists with periods of seasonal idleness, disrupted the subsistence mechanisms of the countryside' (ibid. 122). Cf. C. R. Phillips, *Ciudad Real, 1500–1750. Growth, Crisis, and Readjustment in the Spanish Economy* (Cambridge, MA, 1979), 54. Some of the muleteers would make an annual trip to Madrid or a large seaport. Most of them operated, if on a medium distance, within a range of 80–120 km (ibid. 73). Examples are given by Ringrose (n. 35), 50–1 and Braudel (n. 37), 327–8.

[41] On professional transporters, Ringrose (n. 35), 58ff.; Phillips (n. 40), 57–8.

[42] Ringrose (n. 35), 5, 37ff., and 103ff. Madrid's dependence on governmental support not only involved the state's participation in the corn supply to Madrid; less than half of the corn consumed by Madrid was bought with state involvement. Part of the supply, however, had to be subsidized. Moreover, for the transportation of food and fuel Madrid depended on the professional transporters. These in turn depended on the government for vital access to common grazing and other privileges. Madrid concentrated so much oxen around the city that grazing had become a serious problem. Without government support the professional carreteers could not have existed on the scale they did exist; without the carreteers, Madrid could not have been supplied with food and fuel (until the railway came, that is).

moved was larger by land. Secondly it has been shown that cost is not the all-determining factor and that a large transport capacity overland was present and seasonally available.[43] The first point is related to the predominance of agriculture as the means of sustenance for a large majority of the population. This was certainly no less true for the Roman world than for eighteenth-century France or Spain. There should therefore be no doubt that the hypothesis is valid for antiquity. Hopkins makes the same point and states that 'this short-haul transport of the agricultural surplus, typically by farmers themselves to a nearby market town, constituted the greatest proportion of all transport which occurred in the Roman world'.[44]

The same holds true for the seasonality of agricultural labour. Unfortunately, the sources do not tend to give much attention to the lower classes and their needs. The farms described by the agricultural writers, for instance, are typical medium or rich farms, where slaves formed the basic workforce. In periods of peak labour demand, day-labourers would be hired to help out. What these day-labourers were doing when they were not working on the slave-run farms was, however, no business of an author like Varro.[45] Therefore he does not address the issue. Admittedly, the same argument may not be applied to the lack of clear evidence in the agricultural handbooks for the hiring out of their oxen and mules in slack periods by such farmers.[46] The juridical literature, on the other hand, contains ample evidence for the hiring out of mules, sometimes with a slave muleteer. These were cases of *locatio-conductio*, and one of the issues addressed is the matter of liability in case of damage.[47] It is not surprising that the texts do not show whether the animals and slaves involved were primarily employed in agricultural labour or whether they were engaged throughout the year by professional transporters, because that was not relevant from the legal point of view. Conversely, though, the *Codex Theodosianus* explicitly forbade the employment of animals and carts of the *cursus publicus* in agriculture, even at harvest time.[48] The fact that peasants and work animals in agriculture in the Roman world experienced seasonal underemployment makes it very likely that they were employed in transport at some times of the year in the Roman world just as in early modern Europe. It may be interesting in this context to point to two features of ancient Greece. First, the transportation of marble to the sites of monumental buildings, sometimes over quite some distance, depended on the farmers for the required oxen. Undoubtedly,

[43] According to the census data, Spain counted approximately 450,000 mules and donkeys at the end of the eighteenth century, about half of which were employed in transport. Ringrose (n. 35), 90.

[44] Hopkins (n. 34 [1983]), 85. Cf. Spurr (n. 4), 145, who emphasizes that most towns in Italy lacked access to river or sea and therefore depended on road transport. Furthermore, the agricultural produce that was distributed throughout the Mediterranean by ship had to be transported to the sea first. Varro, *R.R.* 2.6.5 gives an example of pack animals transporting oil, wine and corn from Apulia and Calabria to the sea.

[45] Varro, *R.R.* 1.17.2f. Cf. Rathbone (n. 8), 12ff.; Spurr (n. 4), 139.

[46] Columella 1.4.6 refers to the hiring out of oxen, but not to advise such action. He warns that without sufficient supervision slaves may cause harm, e.g. by hiring out oxen. It is not stated for what purpose the oxen are hired out.

[47] S. von Bolla-Kotek, *Untersuchungen zur Tiermiete und Viehpacht im Altertum* (München, 1969), 7ff.; S. Martin, 'Servum meum mulionem conduxisti. Mules, muleteers and transportation in classical Roman law', *TAPA* 120 (1990), 301–314. Cf. R. J. Buck, *Agriculture and Agricultural Practice in Roman Law*, *Historia* Einzelschriften, 45 (Wiesbaden, 1993), 7ff., on the biases of juridical literature on agriculture.

[48] *Codex Theod.* 8.5.53; *Codex Just.* 12.50.15; Buck (n. 47), 49. The existence of professional transporters may be concluded from the *collegium mulionum et asinariorum* in Potentia, *CIL* X 143. Cf. Buck (ibid.), 48, for corporations of pack animal drivers in late Imperial law.

this transportation occurred when the oxen were not needed on the land. Even more interesting is that making use of their excess manpower was basically what the Greek farmers of Hesiod's day were doing, when in the summer they acted as sailors and traders to dispose of their surplus agricultural produce and to supplement their income during the agriculturally slack time of year.[49] The features of labour demand in peasant agriculture provided them with excess manpower to engage in other sectors of the economy, not the least in overland transport, thus diminishing the meaning of 'cost' and 'price' in this context.[50]

RURAL INDUSTRY

The villas of the Roman world, whose primary workforce consisted of slaves, were not less subjected to seasonal fluctuations in their labour demands than the farms of the peasants and small farmers. It is often assumed that slave-run estates could only function efficiently if they had recourse to day-labourers in peak times such as the harvest period, since otherwise the slave labour could not be employed fully at other times of the year. Garnsey, for instance, states categorically that 'free wage-labour was always needed to supplement a permanent servile labour-force on the slave-estates'.[51] Additional labour in the form of day-labourers did play a role in commercial farming, but it has to be emphasized that large-scale farmers could profit less from cheap labour at harvest time, because peak demand of labour on slave-run farms had to compete with the labour demand on the farms of peasants and farmers.[52] The latter would not work as day-labourers on commercial farms if this would be detrimental to their own farming. Only insofar as day-labourers were brought in from other regions, such as 'the Umbrian labourers who cross the Po every summer to help the Sabines with their harvest' (Suetonius, *Vesp.* 1), were interests not in conflict.[53] Generally, however, day-labourers came from the vicinity of the estate.[54] The cost of such seasonal labour on commercial farms would therefore depend on

[49] Transportation of marble: Burford (n. 33), 16. See also Osborne (n. 33), 14; S. Isager and J. E. Skydsgaard, *Ancient Greek Agriculture. An Introduction* (London, 1992), 104ff. Hesiod's sailors: G. L. Snider, 'Hesiod's sailing season (*Works and Days* 663–665)', *AJAH* 3 (1978), 130; H. T. Wallinga, 'Hesiod's farmer as a sailor', in H. Sancisi-Weerdenburg (ed.), *De agricultura. In memoriam Pieter Willem de Neeve (1945–1990)* (Amsterdam, 1993), 1–12.

[50] Some authors accord transportation cost and effort an important role in establishing trade patterns and production zones around central markets. See e.g. De Neeve's application (n. 27), 5ff., of Von Thünen's principles on a regional and on a local level. The longer the distance, the higher the cost of transport and therefore the more important the factor of transportation cost against other factors. However, regarding short distances, other factors such as soil fertility and availability of natural resources played a relatively larger role. The limitation of the role of cost and effort of transportation, as argued here, assigns a more important role on the local level to other factors in the determination of economic patterns. Accordingly, De Neeve is not very convincing on the local level, i.e. in his case-study of the immediate hinterland of Veii. Cf. Frayn (n. 29), 75–6.

[51] Garnsey (n. 1), 36 and 41–2. Cf. Evans (n. 20), 136; Skydsgaard (n. 1), 66ff.; Rathbone (n. 8), 12ff.; De Neeve (n. 21), 21; W. Scheidel, 'Zur Lohnarbeit bei Columella', *Tyche* 4 (1989), 140; P. Rosafio, 'Slaves and coloni in the villa system', in J. Carlsen et al. (edd.), *Land-use in the Roman Empire* (Rome, 1994), 147 and 152. Cf. Scheidel (ibid.), 144, on the employment of seasonal labourers during the vintage.

[52] Also Scheidel (n. 51), 141, who refers to Columella 2.2.12.

[53] Cf. Garnsey (n. 1), 42; Skydsgaard (n. 1), 69; Spurr (n. 4), 66; Dyson (n. 1), 135. Spurr points out that the passage does not necessarily refer to harvesting.

[54] Cato 1.1.3 advises potential buyers of estates to pay attention to the available labour in the area. See also Scheidel (n. 51), 139.

the structural underemployment on peasant farms; on claims of the landowners to the labour of their less wealthy neighbours due to debt, clientage, and so forth; and on the availability of labour from non-agricultural sectors and the landless poor.[55] Also during the vintage labour demand and consequently labour costs were high. Columella, therefore, advised the cultivation of different types of vine, in order to lessen the peak in labour demand. At such peak times, as Columella realized, labour was not cheap.[56]

Slave-run farms, however, did not depend solely on seasonal employment for efficient use of their slave labour, since the option of using available labour external to their farm was open to large-scale landowners as well. The Roman world provides ample evidence of owners of estates who exploited other resources from their land which were not directly related to farming. For instance, some estates included clay-beds, which were used in the production of amphorae, bricks, and tiles. Landowners probably employed slave labour in producing amphorae, in which to sell part of their produce like wine or olive oil, or in manufacturing bricks and tiles for the local market. The location of potteries in the provinces has led to the conclusion 'that these industries were seasonal and run by those involved in agriculture'.[57] Moreover, in the Mediterranean, circumstances were ideal for manufacturing sun-dried bricks during the summer, when also the labour requirement on the farm was low. The owner of the slave-run farm therefore had two options: either to employ day-labourers at peak times or to use part of his labour external to the agricultural practice. The circumstances governing the supply of day-labour at peak times and the opportunities for using or selling their non-agricultural produce would have determined the role of each of these options. It provides another example, however, of the connection between the agricultural and non-agricultural sector.

Though lacking the capital for large investments in industry, peasants and small farmers could also employ part of their labour in processing raw materials and manufacturing goods.[58] An important sector of manufacture in early modern Europe, about which little is known regarding the Roman world, is the textile industry.[59] A. H. M. Jones observes that we have some idea of urban production and of the production of luxury cloth, but the sources pay almost no attention to the processing of wool and flax, or to the rural production of cheap cloth.[60] Though the extent of a rural market for plain garments—or, for that matter, other plain items such as tools, rope, and furniture—remains unknown, the rural population and the people in nearby towns must have constituted a significant market for simple goods, for which labour

[55] Cf. Garnsey (n. 1), 39 and 42; P. Garnsey and G. Woolf, 'Patronage of the rural poor in the Roman world', in A. Wallace-Hadrill (ed.), *Patronage in Ancient Society* (S.l., 1989), 159ff.; Foxhall (n. 21), 112. On ancient Greece, Osborne (n. 33), 94. See Phillips (n. 40) for problems in finding harvesters in early modern, inland Spain.

[56] Columella 3.21.9f. Cf. Rosafio (n. 51), 149.

[57] M. Millet, 'Town and country. A review of some material evidence', in D. Miles (ed.), *The Romano-British Countryside*, BAR 103 (Oxford, 1982), 428. On the location of such industries, also L. de Ligt, 'Demand, supply, distribution. The Roman peasantry between town and countryside', *Münstersche Beiträge zur antiken Handelsgeschichte* 10 (1991), 35ff.

[58] We have already seen the example of peasants producing and selling charcoal in early modern Spain.

[59] Jones (n. 30), 360. On early modern textile industry, e.g. Kriedte (n. 2), 46ff. and 93ff.

[60] Jones (n. 30), *passim*. Implements used by women for wool processing are reckoned by Columella 12.3.1ff. among the items regularly used on a farm. Furthermore, on days when the weather does not allow women to work on the land, they should make clothes for themselves, the supervisors or other slaves.

cost rather than quality was the most important factor.[61] Such manufacture provided an important economic strategy for peasants and small farmers in early modern Europe, and it is hard to see why it should not have done so in the Roman world. In the Greek and Roman sources, spinning and weaving were typically among the duties of women.[62] Involvement of women in cultivating the land is partly governed by social attitudes. Despite the fact that we sometimes hear of female slaves and day-labourers who were employed during the harvest, there seem to have been social restrictions on the involvement of female members of the household in tilling the land in the ancient world. Social norms that were disregarded for servile women and day-labourers on the commercial farms and estates described in our sources may have been observed regarding the freeborn women of the peasantry. It might be suggested that structural underemployment on the small farm had some role in establishing the division of labour between men and women.[63] However that may be, underemployment provided the opportunity for the employment of cheap, rural labour in the textile industry in the Roman world, where the reproductive cost was partly borne by its primary dependence on agricultural production. Labour costs played less of a role in the manufacture of luxury goods, for which skill and the availability of a market were more important conditions, and which may, therefore, have been undertaken primarily by 'professional', urban textile workers, among whom many were probably slaves. As Jones observed: 'The great weaving centres produced in the main luxury garments, the best of which cost 20 times as much as those made for the poorest classes.'[64]

CONCLUSIONS

The fact that rural wage labour based on agriculture is not visible in the ancient

[61] Cato's ideal farmer would buy as little as possible; nevertheless he would purchase items such as clothes for the slaves, mill-stones, iron tools, and ropes on the market, which indicates a demand for such rurally produced goods (Cato 22 and 135). Columella 12.3.6 advises that women make clothes for some of the slaves, in order to save money. Hopkins (n. 34 [1978]), 52ff., argues, firstly, that, despite their poverty, the large number of peasants constituted a significant market. Secondly, some social diversification of the 'masses' is required; the buying power and demand of the middle groups should not be underestimated. Cf. Jones (n. 30), 352; De Ligt (n. 32), 140, on the extent of a rural market for shoes, plain clothing, etc. Cf. De Ligt (ibid.), 146.

[62] Cf. Jones (n. 30), 360; S. B. Pomeroy, *Goddesses, Whores, Wives, and Slaves. Women in Classical Antiquity* (New York, 1975), 199–200; S. Treggiari, 'Lower class women in the Roman economy', *Florilegium* 1 (1979), 67ff.

[63] Cf. Sallares (n. 19), 83. On ancient attitudes, W. Scheidel, 'Feldarbeit von Frauen in der antiken Landwirtschaft', *Gymnasium* 97 (1990), 424ff.; 'The most silent women of Greece and Rome. Rural labour and women's life in the ancient world (II)', *Greece and Rome* 43 (1996), 5ff. Most references to female day-labourers are Greek. Columella 12.3.6—women should make clothes when the weather does not allow them to work on the land—indicates that slave women regularly worked in the field. Cf. Scheidel (ibid. [1990]), 421; (ibid. [1996]), 3. Regarding ancient Greece, Osborne (n. 33), 70. While in modern southern Italy it was improper for women to work outside the house, in northern Italy women played a crucial role in the labour force: Kertzer and Brettell (n. 16), 95. Caiati (n. 24), 120, however, observes that cereal cultivation was the responsibility of adult males in early modern Tuscany. Cf. the role of women in agriculture mainly as day-labourers in early modern Languedoc, E. Le Roy Ladurie, *Die Bauern des Languedoc*, Übers. v. Les paysans de Languedoc, cop. 1969 (Darmstadt, 1985), 125–6. On the gender-specific division of peasant-labour, also Knotter (n. 8), 34–5.

[64] Jones (n. 30), 353. Evans (n. 13), 121ff., argues that, though the clothing industry offered employment for peasant women, these were increasingly confronted with competition from slaves and freedmen. A differentiation between cheap clothing and luxury products may be required. Cf. Kriedte (n. 2), 97.

sources should not surprise us. The rural world in its entirety remains largely hidden in the dark, except for the estates of the wealthy. From the point of view of the authors who provide most of our knowledge on rural matters, transportation, day-labourers, tenants, and the like were interesting only in so far as they related to their own estates. Moreover, this aspect of the economy of rural life is also archaeologically invisible. Confronted with a lack of data for the economy of the Roman world, it has become an accepted method to look at later, better documented times to fill the gaps in our knowledge and to create the models from which to study the ancient economy. Though there are dangers in making deductions from the economies of other periods, it should be possible to clarify some obscure aspects of the Roman economy by comparing the factors which determined how the economy at other times actually functioned with the factors determining similar economic activity in the Roman world.

The economy of the ancient world was in most regions not sufficiently developed to sustain a large non-agricultural population without the element of externalization of reproductive cost, which provided a significant pool of labour for the non-agricultural sectors. While undoubtedly the rural population almost exclusively consisted of peasants and small farmers, whether tenants or not, and of commercial farmers and their slaves and day-labourers, this did not preclude a significant element of non-agricultural labour in transport and manufacture, which was economically viable because it was cheap. These sectors, however, remained inextricably connected to agriculture; by its nature, such non-agricultural labour could not exist disconnected from agriculture.[65] Only in those places where the demand for labour from the non-agricultural sector was sufficiently high and stable could a large element of labour exist independently from agriculture. Furthermore, the cost of labour is only one element; the less the role of cost, compared with such considerations as skill and full-time availability,[66] the less the dependence on agriculture. As we have seen, however, the concept of externalization of cost has important consequences for our understanding of transport and manufacture in the Roman world.

Finley pointed out that the political programme of the masses in antiquity was one of peasants, not of wage labourers, from which he concluded that wage labour was unimportant.[67] This might be a false contrast: the large mass of rural people, for whom agriculture was the main basis for survival, may rather have created a significant sector of wage labour, which remained of secondary importance for the workers but which is, nevertheless, of prime importance for our understanding of the economy of the Roman world.

University of Nijmegen PAUL ERDKAMP

[65] Cf. Garnsey (n. 1), 4: 'Peasant displacement in the Republic and early Empire had not proceeded far enough to make possible the creation of a stable wage labour force.' Garnsey is, of course, right as far as full-time wage labour, which was independent of agriculture and therefore could be concentrated in large urban centres, is concerned.

[66] The supply of labour to the labour market by peasants and small farmers is not stable, which provided structural problems for the early modern European rural industry. At times of increased demand for labour, for instance due to increased demand for manufactured goods, wages rose; peasants reacted by reducing working hours. Medick (n. 2), 301; Kriedte (n. 2), 166.

[67] M. I. Finley, *The Ancient Economy* (London, 1985), 80–1. Cf. Knotter (n. 8), 39, regarding early modern Europe: 'The behaviour of worker-peasantries demonstrates that enduring dependence on wage earning and on the forces of the labour market can exist without the creation of a working class.'